

What is claimed is:

1. An image recording apparatus for recording an image by irradiating a printing plate with a light beam, comprising:

5 a holding drum for holding a printing plate;

a light emission part for irradiating said printing plate with a light beam to perform writing;

a rotation mechanism for scanning an irradiation position of said light beam on said printing plate in a main scan direction by rotating said holding drum relatively to said  
10 light emission part;

a moving mechanism for scanning said irradiation position in a subscan direction by moving said light emission part relatively to said holding drum along a direction parallel to a rotation axis of said holding drum;

a storage part for storing data of an original image;

15 an operation part for generating data of a modified image obtained by substantially modifying width of said original image in said subscan direction; and

a control part for controlling emission of said light beam according to said data of said modified image while shifting writing timing in said main scan direction.

20 2. The image recording apparatus according to claim 1, wherein

said operation part modifies said width of said original image in said subscan direction by deleting or adding pixels.

3. The image recording apparatus according to claim 2, wherein

25 said operation part divides a pixel group constituted of pixels aligned in said

subscan direction into a plurality of modification unit pixel groups as many as pixels to be deleted or added and determines a position of one pixel to be deleted or added from/to each of said plurality of modification unit pixel groups on the basis of a random number.

5           4. The image recording apparatus according to claim 3, wherein  
the number of pixels in each of said plurality of modification unit pixel groups is half to twice a value obtained by dividing the number of pixels in said pixel group by the number of said pixels to be deleted or added.

10           5. The image recording apparatus according to claim 2, wherein  
said storage part stores positions of pixels to be deleted or added in said original image and processing instruction data substantially indicating distortion of said original image in said modified image, and  
said operation part generates data of said modified image on the basis of said  
15   processing instruction data.

          6. The image recording apparatus according to claim 5, wherein  
said processing instruction data comprises:  
commands for inserting a blank to one end of said subscan direction in an image  
20   space where said modified image is generated; and  
commands for deleting or adding pixels in aligning pixels of said original image from said one end to the other end with following said blank.

          7. The image recording apparatus according to claim 6, wherein  
25   said light emission part emits a plurality of light beams aligned in said subscan

direction, and

data of said modified image generated with said commands for inserting a blank is data for performing writing while continuously moving irradiation positions of said plurality of light beams in said subscan direction.

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8. The image recording apparatus according to claim 1, wherein

recording of an image onto said printing plate is started on the basis of some data before said operation part generates the whole data of said modified image.

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9. The image recording apparatus according to claim 1, wherein

said operation part obtains data of said modified image and data of shifting of writing timing in said main scan direction by said control part, on the basis of a printing result of a test pattern.

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10. The image recording apparatus according to claim 9, further comprising

an image pickup part for performing an image pickup of a paper on which said test pattern is printed, to acquire said printing result.

11. A printing apparatus, comprising:

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a holding drum for holding a printing plate;

a light emission part for irradiating said printing plate with a light beam to perform writing;

a rotation mechanism for scanning an irradiation position of said light beam on said printing plate in a main scan direction by rotating said holding drum relatively to said

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light emission part;

a moving mechanism for scanning said irradiation position in a subscan direction by moving said light emission part relatively to said holding drum along a direction parallel to a rotation axis of said holding drum;

a storage part for storing data of an original image;

5 an operation part for generating data of a modified image obtained by substantially modifying width of said original image in said subscan direction;

a control part for controlling emission of said light beam according to said data of said modified image while shifting writing timing in said main scan direction; and

a printing mechanism for performing printing with said printing plate on which  
10 an image is recorded by said light emission part.

12. The printing apparatus according to claim 11, wherein  
printing is performed by using said printing plate held by said holding drum.

15 13. The printing apparatus according to claim 11, wherein  
said printing mechanism performs multicolor printing.

14. The printing apparatus according to claim 11, wherein  
said operation part modifies said width of said original image in said subscan  
20 direction by deleting or adding pixels.

15. The printing apparatus according to claim 11, wherein  
recording of an image onto said printing plate is started on the basis of some data  
before said operation part generates the whole data of said modified image.

16. The printing apparatus according to claim 11, wherein

said operation part obtains data of said modified image and data of shifting of writing timing in said main scan direction by said control part, on the basis of a printing result of a test pattern.

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17. The printing apparatus according to claim 11, further comprising

an image pickup part for performing an image pickup of a paper on which said test pattern is printed, to acquire said printing result.

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18. An image recording method of recording an image onto a printing plate, comprising the steps of:

a) preparing data of an original image;

b) generating data of a modified image obtained by substantially modifying width of said original image in a predetermined subscan direction; and

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c) performing image recording by irradiating a printing plate held by a holding drum with a light beam,

wherein an irradiation position of said light beam on said printing plate is scanned in a main scan direction by rotating said holding drum relatively to a light emission part, said irradiation position is scanned in said subscan direction by moving said light emission part relatively to said holding drum along a direction parallel to a rotation axis of said holding drum, and said light beam is emitted from said light emission part on the basis of data of said modified image in synchronization with scanning in said main scan direction and said subscan direction while shifting writing timing for said light beam in said main scan direction in said step c).

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19. The image recording method according to claim 18, wherein  
said width of said original image in said subscan direction is modified by  
deleting or adding pixels in said step b).

5        20. The image recording method according to claim 19, wherein  
a pixel group constituted of pixels aligned in said subscan direction is divided  
into a plurality of modification unit pixel groups as many as pixels to be deleted or added  
and a position of one pixel to be deleted or added from/to each of said plurality of  
modification unit pixel groups is determined on the basis of a random number in said step  
10    b).

21. The image recording method according to claim 20, wherein  
the number of pixels in each of said plurality of modification unit pixel groups is  
half to twice a value obtained by dividing the number of pixels in said pixel group by the  
15    number of said pixels to be deleted or added.

22. The image recording method according to claim 19, wherein  
data of said modified image is generated on the basis of positions of pixels to be  
deleted or added in said original image and processing instruction data substantially  
20    indicating distortion of said original image in said modified image in said step b).

23. The image recording method according to claim 22, wherein  
said processing instruction data comprises:  
commands for inserting a blank to one end of said subscan direction in an image  
25    space where said modified image is generated; and

commands for deleting or adding pixels in aligning pixels of said original image from said one end to the other end with following said blank.

24. The image recording method according to claim 23, wherein  
5 a plurality of light beams aligned in said subscan direction are emitted to said printing plate in said step c), and  
data of said modified image generated with said commands for inserting a blank is data for performing writing while continuously moving irradiation positions of said plurality of light beams in said subscan direction.

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25. The image recording method according to claim 22, wherein  
recording of an image onto said printing plate is started on the basis of some data before said operation part generates the whole data of said modified image.

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26. The image recording method according to claim 18, wherein  
data of said modified image and data of shifting of writing timing in said main scan direction are obtained on the basis of a printing result of a test pattern.

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27. The image recording method according to claim 26, further comprising the step:  
acquiring said printing result by performing an image pickup of a paper on which said test pattern is printed.

28. An image modification method of modifying width of an image in a  
25 predetermined direction, comprising the steps of:

dividing a pixel group constituted of pixels aligned in a predetermined direction into a plurality of modification unit pixel groups as many as pixels to be deleted or added;

determining a position of one pixel to be deleted or added from/to each of said plurality of modification unit pixel groups on the basis of a random number; and

5        modifying said pixel group by deleting or adding said one pixel from/to a position determined in each of said plurality of modification unit pixel groups.

29. The image modification method according to claim 28, wherein

10        the number of pixels in each of said plurality of modification unit pixel groups is half to twice a value obtained by dividing the number of pixels in said pixel group by the number of pixels to be deleted or added.

30. An image modification method of modifying width of an image in a predetermined direction, comprising the steps of:

15        inserting a blank to one end of said predetermined direction in an image space where a modified image is generated; and

deleting or adding pixels while aligning pixels of an image before modification from said one end to the other end with following said blank.